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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,208	10/09/2001	Ross A. Benson	TA-00455	5805

7590

04/22/2004

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EXAMINER

MUSSER, BARBARA J

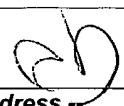
ART UNIT

PAPER NUMBER

1733

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/973,208	BENSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Barbara J. Musser	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 06 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 17-26 is/are pending in the application.
- 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,17,21 and 24 is/are rejected.
- 7) ☒ Claim(s) 4-12,18-20,23,25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Childress(U.S Patent 5,980,665) in view of Composite Structures: Theory and Practice by Owens et al. and Reis et al.(U.S. Patent 5,879,492)

Childress discloses making a composite structure for aircraft by placing multiple peel plies on a surface of a composite, inserting pins into the surface through the peel plies, curing the composite, removing the peel plies, applying a second composite to the pins so that they extend into the second composite, and curing the second composite.(Col. 1, ll. 12-13; Col. 11, ll. 26-45; Col. 12, ll. 40-42; Col. 13, ll. 8-9; Figures 1 and 4) The reference does not disclose the second composite being a woven preform with a base having two legs extending therefrom. However, Childress does disclose that the second composite can be anything so long as it is capable of z-pin insertion.(Col. 13, ll. 53-55) Owens et al. discloses a woven preform with a base and two legs which contained matrix failures and lasted longer before failure than other composites used in aircraft.(Pg. 398) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a woven preform with a base and two legs extending outward as the second composite of Childress since Childress

discloses any material capable of z-pin insertion and be used and since Owens et al. discloses the preform can be used with z-pins and contains matrix failures and lasts longer before failure than other joints used in aircraft.(Pg. 398-99)

The references cited above discloses an example where the peel ply is Teflon but Childress does state the peel ply can be made of any suitable material.(Col. 14, ll. 14, 18-22) Reis et al. discloses that conventional peel plies are woven since that results in imparting a texture to the surface of the composite, resulting in higher surface area.(Col. 1, ll. 34-45) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a woven peel ply in the composite of Childress and Owens et al. since Childress discloses the peel ply can be of any material and Reis discloses that peel plies are conventionally made of woven materials particularly since Reis discloses that woven peel plies impart a texture to the surface of the composite, resulting in higher surface area.(Col. 1, ll. 34-45)

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Childress, Owens et al., and Reis et al. as applied to claim 1 above and further in view of Affordable Composite Structure for Next Generation Fighters by Bersuch et al.

Owens et al. is silent as to whether a composite is located within the slot between the two legs of the woven preform when the preform is cured. Bersuch et al. discloses the layers can be co-cured.(Pg. 6) It would have been obvious to one of ordinary skill in the art at the time the invention was made to co-cure the woven preform and the composite located between the legs of the preform since co-curing layers is

well-known as evidenced by Bersuch et al. which discloses co-curing composites is known in the aircraft forming arts.

3. Claims 17, 21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Childress, Owens et al., and Reis et al. as applied to claim 1 above, and further in view of Fusco et al.(U.S Patent 5,589,015).

Childress discloses inserting the pins by crushing the foam carrier against the composite during curing(Col. 14, ll. 37-42) but does suggest that any suitable insertion process can be used.(Col. 12, ll. 44-45) Fusco et al. discloses a pin insertion process which eliminates the use of increased pressures and temperatures in an autoclave to force the pins into the composite(Col. 2, ll. 7-10) by using ultrasonic energy to force the pins into the composite(Col. 2, ll. 20-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use ultrasonic energy to insert the pins in the composite since this would remove the need for an autoclave.(Col. 2, ll. 7-10) While the reference does not disclose when the carrier is removed, since it is not required in the curing process, one in the art would appreciate that it would be removed prior to curing to prevent it from degrading during the curing process particularly since the peel plies alone can protect the z-pins.

Regarding claim 21, while the references are silent as to the existence of an elastomeric spacer, it is well-known in general to use spacers to increase the thickness or depth of an item. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an elastomeric spacer with the peel plies when it is

desired to have an increased height for the pins since the use of spacers in general is well-known in the bonding arts as well as many other arts.

### ***Claim Objections***

4. Claim 4 is objected to because of the following informalities: in line 12, the word "z-ins" appears. This is believed to be a misspelling of --z-pins--. Appropriate correction is required.

### ***Allowable Subject Matter***

5. Claims 4-12 would be allowable if claim 4 were re-written to overcome the informality in the claim.

6. Claims 18-20, 22, 23, 25, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 4-12, 19, 22, 23, 25, and 26, the prior art of record does not teach or fairly suggest leveling the z-pins while the peel plies are present so as to form a stubble of z-pins of the same height. While cutting the z-pins flush is known as shown by Childress(U.S Patent 5,935,680), this occurs at the end of the formation of the joint and is not intended to level the pins to form a stubble of z-pins of the same height. Regarding claim 18, while de-bulking is known in general in the resin impregnating arts, there is no suggestion in the art to de-bulk the composite after application of the peel

plies and before insertion of the z-pins. Regarding claim 20, while it is known in the art to use non-porous films as release layers, the prior art of record does not teach or fairly suggest placing a non-porous film between two peel plies, particularly since the z-pins are inserted through the peel plies and therefore through the non-porous film, forming holes making it porous.

### ***Response to Arguments***

8. Applicant's arguments filed 1/6/04 have been fully considered but they are not persuasive.

Regarding applicant's argument that Childress does not appreciate the advantages of a woven peel ply, Reis et al. does. While Childress discloses a Teflon peel ply, it indicates the peel ply can be made of any suitable material.(Col. 14, ll. 14, 18-22)

Regarding applicant's argument that Childress teaches away from removing the foam carrier prior to curing, Childress discloses any conventional pin insertion technique can be used, and Fusco discloses inserting the pins without curing. While the reference does not disclose when the carrier is removed, since it is not required in the curing process, one in the art would appreciate that it would be removed prior to curing to prevent it from degrading during the curing process.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Barbara J. Musser** whose telephone number is **(571) 272-1222**. The examiner can normally be reached on Monday-Thursday; alternate Fridays.

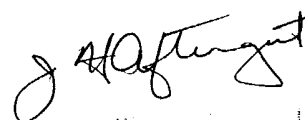
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571)-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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